



65504-A.ST25

#3

SEQUENCE LISTING

<110> Gilad, Shlomit
Skaliter, Rami

<120> ATM MUTATIONS IN BREAST CANCER

<130> 65504-A

<140> 09/810,993

<141> 2001-03-16

<150> 60/189,761

<151> 2000-03-16

<160> 45

<170> PatentIn version 3.1

<210> 1

<211> 9171

<212> DNA

<213> homo sapien

<400> 1
atgagtctag tacttaatga tctgcttattc tgctgccgtc aactagaaca tgatagagct 60
acagaacgaa agaaagaagt tgagaaatctt aagcgctga ttcgagatcc tgaacaatt 120
aaacatctag atcggcattc agattccaaa caaggaaaat atttgaattg ggatgctgtt 180
tttagattttt tacagaaata tattcagaaa gaaacagaat gtctgagaat agcaaaacca 240
aatgtatcag cctcaacaca agcctccagg cagaaaaaga tgcaggaaat cagtagtttg 300
gtcaaatact tcatcaaatg tgcaaacaga agagcaccta ggctaaaatg tcaagaactc 360
ttaaattata tcatggatac agtgaaagat tcatctaattg gtgctattta cggagctgat 420
tntagcaaca tactactcaa agacattctt tctgtgagaa aatactggtg tgaaatatct 480
cagcaacagt ggttagaatt gttctctgtg tacttcaggc tctatctgaa accttcacaa 540
gatgttcata gagtttttagt ggctagaata attcatgctg ttaccaaagg atgctgttct 600
cagactgacg gattaaattc caaatttttg gacttttttt ccaaggctat tcagtgtgag 660
agacaagaaa agagctcttc aggtctaaat catatcttag cagctcttac tatcttcttc 720
aagacttttg ctgtcaactt tcgaattcga gtgtgtgaat taggagatga aattcttccc 780
actttgcttt atatttgac tcaacatagg cttaatgatt ctttaaaaga agtcattatt 840
gaattatttc aactgcaaat ttatatccat catccgaaag gagccaaaac ccaagaaaaa 900

```

ggtgcttatg aatcaacaaa atggagaagt attttataca acttatatga tctgctagtg      960
aatgagataa gtcatatagg aagtagagga aagtattctt caggatttcg taatattgcc      1020
gtcaaagaaa atttgattga attgatggca gatatctgtc accagggtttt taatgaagat      1080
accagatcct tggagatttc tcaatcttac actactacac aaagagaatc tagtgattac      1140
agtggtccctt gcaaaaaggaa gaaaatagaa ctaggctggg aagtaataaa agatcacctt      1200
cagaagtcac agaattgattt tgatcttgtg ccttggctac agattgcaac ccaattaata      1260
tcaaagtatc ctgcaagttt acctaactgt gagctgtctc cattactgat gatactatct      1320
cagcttctac cccaacagcg acatggggaa cgtacaccat atgtgttacg atgccttacg      1380
gaagttgcat tgtgtcaaga caagagggtca aacctagaaa gtcacaaaaa gtcagattta      1440
ttaaaaactct ggaataaaaat ttggtgtatt acctttcgtg gtataagttc tgagcaaata      1500
caagctgaaa actttggctt acttggagcc ataattcagg gtagtttagt tgaggttgac      1560
agagaattctt ggaagttatt tactgggtca gcctgcagac cttcatgtcc tgcagtatgc      1620
tgtttgactt tggcactgac caccagtata gttccaggaa cggtaaaaaat gggaaatagag      1680
caaaaatatgt gtgaagtaaa tagaagcttt tctttaaagg aatcaataat gaaatggctc      1740
ttattctatc agtttagagg tgacttagaa aatagcacag aagtgcctcc aattcttcac      1800
agtaattttc ctcatcttgt actggagaaa attcttgtga gtctcactat gaaaaactgt      1860
aaagctgcaa tgaatTTTTT ccaaagcgtg ccagaatgtg aacaccacca aaaagataaa      1920
gaagaacttt cattctcaga agtagaagaa ctatttcttc agacaacttt tgacaagatg      1980
gactttttta ccattgtgag agaattgtgt atagaaaagc accagtccag tattggcttc      2040
tctgtccacc agaattctca ggaatcactg gatcgctgtc ttctgggatt atcagaacag      2100
cttctgaata attactcatc tgagattaca aattcagaaa ctcttgtccg gtgttcacgt      2160
cttttggtgg gtgtccttgg ctgctactgt tacatgggtg taatagctga agaggaagca      2220
tataagtcag aattattcca gaaagccaag tctctaattgc aatgtgcagg agaaagtatc      2280
actctgttta aaaataagac aaatgaggaa ttcagaattg gttccttgag aaatatgatg      2340
cagctatgta cacgttgctt gagcaactgt accaagaaga gtccaaataa gattgcatct      2400
ggctttttcc tgcgattgtt aacatcaaag ctaatgaatg acattgcaga tatttgtaaa      2460
agtttagcat ccttcatcaa aaagccattt gaccgtggag aagtagaatc aatggaagat      2520
gataactaat gaaatctaata ggaggtggag gatcagtcac ccatgaatct atttaacgat      2580

```

taccctgata gtagtgttag tgatgcaaac gaacctggag agagccaaag taccataggt	2640
gccattaatc ctttagctga agaatatctg tcaaagcaag atctactttt cttagacatg	2700
ctcaagttct tgtgtttgtg tgtaactact gctcagacca atactgtgtc ctttagggca	2760
gctgatattc ggaggaaatt gttaatgtta attgattcta gcaogctaga acctaccaa	2820
tccctccacc tgcataatgta tctaattgctt ttaaaggagc ttcttggaga agagtacccc	2880
ttgccaatgg aagatgttct tgaacttctg aaaccactat ccaatgtgtg ttctttgtat	2940
cgtcgtgacc aagatgtttg taaaactatt ttaaaccatg tccttcatgt agtgaaaaac	3000
ctaggtcaaa gcaatatgga ctctgagaac acaagggatg ctcaaggaca gtttcttaca	3060
gtaattggag cattttggca tctaacaaag gagaggaaat atatattctc tgtaagaatg	3120
gccctagtaa attgccttaa aactttgctt gaggctgac cttattcaaa atgggccatt	3180
cttaatgtaa tgggaaaaga ctttctgtg aatgaagtat ttacacaatt tcttgctgac	3240
aatcatcacc aagttcgcat gttggctgca gagtcaatca atagattgtt ccaggacacg	3300
aaggagatt cttccagggt actgaaagca cttcctttga agcttcagca aacagctttt	3360
gaaaatgcat acttgaaagc tcaggaagga atgagagaaa tgtcccatag tgctgagaac	3420
cctgaaactt tggatgaaat ttataataga aaatctgttt tactgacgtt gatagctgtg	3480
gttttatcct gtagccctat ctgcgaaaaa caggctttgt ttgccctgtg taaatctgtg	3540
aaagagaatg gattagaacc tcaccttgtg aaaaagggtt tagagaaagt ttctgaaact	3600
tttgatata gacgtttaga agactttatg gcatctcatt tagattatct ggttttgaa	3660
tggctaaatc ttcaagatac tgaatacaac ttatcttctt ttctttttat ttatttaa	3720
tacacaaata ttgaggattt ctatagatct tgttataagg ttttgattcc acatctggtg	3780
attagaagtc attttgatga ggtgaagtcc attgctaatc agattcaaga ggactggaaa	3840
agtcttctaa cagactgctt tccaaagatt cttgtaaata ttcttctta ttttgctat	3900
gagggtagca gagacagtgg gatggcacag caaagagaga ctgctaccaa ggtctatgat	3960
atgcttaaaa gtgaaaactt attgggaaaa cagattgac acttattcat tagtaattta	4020
ccagagattg tgggtggagt attgatgacg ttacatgagc cagcaaattc tagtgccagt	4080
cagagcactg acctctgtga cttttcaggg gatttggac ctgctcctaa tccacctcat	4140
tttccatcgc atgtgattaa agcaacattt gcctatatca gcaattgtca taaaaccaag	4200

ttaaaaagca ttttagaaat tctttccaaa agccttgatt cctatcagaa aattcttctt	4260
gccatatgtg agcaagcagc tgaaacaaat aatgtttata agaagcacag aattcttaaa	4320
atatatcacc tgtttgtag tttattactg aaagatataa aaagtggctt aggaggagct	4380
tgggcctttg ttcttcgaga cgttatttat actttgatc actatatcaa ccaaaggcct	4440
tcttgatca tggatgtgc attacgtagc ttctccctt gttgtgactt attaagtcag	4500
gtttgccaga cagccgtgac ttactgtaag gatgctctag aaaaccatct tcatgttatt	4560
gttggtacac ttatacccct tgtgtatgag caggtggagg ttcagaaaca ggtattggac	4620
ttgttgaaat acttagtgat agataacaag gataatgaaa acctctatat cagattaag	4680
cttttagatc cttttcctga ccatgttggt ttttaaggatt tgcgtattac tcagcaaaaa	4740
atcaaataca gtagaggacc cttttcactc ttggaggaaa ttaaccattt tctctcagta	4800
agtgtttatg atgcacttcc attgacaaga cttgaaggac taaaggatct tcgaagacaa	4860
ctggaactac ataaagatca gatggtggac attatgagag cttctcagga taatccgcaa	4920
gatgggatta tggtgaaact agttgtcaat ttgttgagc tatccaagat ggcaataaac	4980
cacactggtg aaaaagaagt tctagaggct gttggaagct gcttgggaga agtgggtcct	5040
atagatttct ctaccatagc tataacaacat agtaaagatg catcttatac caaggccctt	5100
aagttatttg aagataaaga acttcagtgg accttcataa tgctgacctt cctgaataac	5160
acactggtag aagatttgtt caaagttcga tcagcagctg ttacctgttt gaaaaacatt	5220
ttagccacaa agactggaca tagtttctgg gagatttata agatgacaac agatccaatg	5280
ctggcctatc tacagccttt tagaacatca agaaaaaagt ttttagaagt acccagattt	5340
gacaaagaaa acccttttga aggcctggat gatataaatc tgtggattcc tctaagtga	5400
aatcatgaca tttggataaa gacactgact tgtgcttttt tggacagtgg aggcacaaaa	5460
tgtgaaattc ttcaattatt aaagccaatg tgtgaagtga aaactgactt ttgtcagact	5520
gtacttccat acttgattca tgatatttta ctccaagata caaatgaatc atggagaaat	5580
ctgctttcta cacatgttca gggatttttc accagctgtc ttogacactt ctgcgaaacg	5640
agccgatcca caaccctgc aaacttggat tcagagtcag agcaactttt ccgatgctgt	5700
ttggataaaa aatcacaaag aacaatgctt gctgttgtgg actacatgag aagacaaaag	5760
agaccttctt caggaacaat ttttaatgat gctttctggc tggatttaaa ttatctagaa	5820
gttgccaagg tagctcagtc ttgtgctgct cactttacag ctttactcta tgcagaaatc	5880

tatgcagata agaaaagtat ggatgatcaa gagaaaagaa gtcttgccatt tgaagaagga	5940
agccagagta caactatttc tagcttgagt gaaaaaagta aagaagaaac tggaataagt	6000
ttacaggatc ttctcttaga aatctacaga agtatagggg agccagatag tttgtatggc	6060
tgtggtggag ggaagatgtt acaaccatt actagactac gaacatatga acacgaagca	6120
atgtggggca aagccctagt aacatatgac ctcgaaacag caatcccctc atcaacacgc	6180
caggcaggaa tcattcaggc cttgcagaat ttgggaactc gccatattct ttcgctctat	6240
ttaaaaggat tggattatga aaataaagac tgggtgtcctg aactagaaga acttcattac	6300
caagcagcat ggaggaatat gcagtgggac cattgcactt ccgtcagcaa agaagtagaa	6360
ggaaccagtt accatgaatc attgtacaat gctctacaat ctctaagaga cagagaattc	6420
tctacatttt atgaaagtct caaatatgcc agagtaaaag aagtgggaaga gatgtgtaag	6480
cgcagccttg agtctgtgta ttcgctctat cccacactta gcaggttgca ggccattgga	6540
gagctggaaa gcattgggga gcttttctca agatcagtca cacatagaca actctctgaa	6600
gtatatatta agtggcagaa aactcccag cttctcaagg acagtgattt tagttttcag	6660
gagcctatca tggctctacg cacagtcatt ttggagatcc tgatggaaaa ggaaatggac	6720
aactcacaaa gagaatgtat taaggacatt ctcaccaaac acctgttaga actctctata	6780
ctggccagaa ctttcaagaa cactcagctc cctgaaaggg caatatttca aattaaacag	6840
tacaattcag ttagctgtgg agtctctgag tggcagctgg aagaagcaca agtattctgg	6900
gcaaaaaagg agcagagtct tgccctgagt attctcaagc aaatgatcaa gaagttggat	6960
gccagctgtg cagcgaacaa tcccagccta aaacttacat acacagaatg tctgaggggtt	7020
tgtggcaact ggtagcaga aacgtgctta gaaaatcctg cggtcatcat gcagacctat	7080
ctagaaaagg cagtagaagt tgctggaaat tatgatggag aaagtagtga tgagctaaga	7140
aatggaaaaa tgaaggcatt tctctcatta gcccggtttt cagatactca ataccaaaga	7200
attgaaaact acatgaaatc atcggaattt gaaaacaagc aagctctcct gaaaagagcc	7260
aaagaggaag taggtctcct tagggaacat aaaattcaga caaacagata cacagtaaag	7320
gttcagcgag agctggagtt ggatgaatta gccctgcgtg cactgaaaga ggatcgtaaa	7380
cgcttcttat gtaaagcagt tgaaaattat atcaactgct tattaagtgg agaagaacat	7440
gatatgtggg tattccggct ttgttcctc tggcttgaaa attctggagt ttctgaagtc	7500

aatggcatga tgaagagaga cggaatgaag attccaacat ataaatTTTT gcctcttatg	7560
taccaattgg ctgctagaat ggggaccaag atgatgggag gcctaggatt tcatgaagtc	7620
ctcaataatc taatctctag aatttcaatg gatcaccccc atcacacttt gtttattata	7680
ctggccttag caaatgcaaa cagagatgaa tttctgacta aaccagaggt agccagaaga	7740
agcagaataa ctaaaaatgt gcctaaacaa agctctcagc ttgatgagga tcgaacagag	7800
gctgcaaata gaataatatg tactatcaga agtaggagac ctcagatggg cagaagtgtt	7860
gaggcacttt gtgatgctta tattatatta gcaaacttag atgccactca gtggaagact	7920
cagagaaaag gcataaatat tccagcagac cagccaatta ctaaaactta gaatttagaa	7980
gatgttggtg tccctactat ggaaattaag gtggaccaca caggagaata tggaaatctg	8040
gtgactatac agtcatttaa agcagaatTT cgcttagcag gaggtgtaaa tttacaaaaa	8100
ataatagatt gtgtaggttc cgatggcaag gagaggagac agcttggtta gggccgtgat	8160
gacctgagac aagatgctgt catgcaacag gtcttcacaga tgtgtaatac attactgcag	8220
agaaacacgg aaactaggaa gaggaaatta actatctgta cttataaggt gggtccctc	8280
tctcagcgaa gtggtgttct tgaatgggtc acaggaactg tccccattgg tgaatttctt	8340
gttaacaatg aagatgggtc tcataaaaga tacaggccaa atgatttcag tgcctttcag	8400
tgccaaaaga aaatgatgga ggtgcaaaaa aagtcttttg aagagaaata tgaagtcttc	8460
atggatgttt gccaaaatTT tcaaccagtt ttccgttact tctgcatgga aaaattcttg	8520
gatccagcta tttggtttga gaagcgattg gcttatacgc gcagtgtagc tacttcttct	8580
attgttggtt acatacttgg acttggtgat agacatgtac agaatatctt gataaatgag	8640
cagtcagcag aacttgtaca tatagatcta ggtgttgctt ttgaacaggg caaaatcctt	8700
cctactcctg agacagttcc ttttagactc accagagata ttgtggatgg catgggcatt	8760
acgggtgttg aagggtgtctt cagaagatgc tgtgagaaaa ccatggaagt gatgagaaac	8820
tctcaggaaa ctctgttaac cattgtagag gtccttctat atgatccact ctttgactgg	8880
accatgaatc ctttgaaagc tttgtattta cagcagaggg cggaagatga aactgagctt	8940
caccctactc tgaatgcaga tgaccaagaa tgcaaacgaa atctcagtga tattgaccag	9000
agtttcaaca aagtagctga acgtgtctta atgagactac aagagaaact gaaaggagtg	9060
gaagaaggca ctgtgctcag tgttggtgga caagtgaatt tgctcataca gcaggccata	9120
gaccccaaaa atctcagccg acttttccca ggatggaaaag cttgggtgtg a	9171

<210> 2
 <211> 31
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 2
 gttgatacta ctttgacctt ccgagtgcag t 31

<210> 3
 <211> 34
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 3
 aggctgaatg aaagggtaat tcatatactg aaga 34

<210> 4
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 4
 gtgcagtgcg gcatacatca c 21

<210> 5
 <211> 28
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 5
 ccttcaagtc ttgtcaatgg aagtgcac 28

<210> 6
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Primer

<400> 6

gccgtgactt actgtaagga tg

22

<210> 7

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 7

aaggctgaat gaaagggtaa ttc

23

<210> 8

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 8

gttgctgaga tatttcaca

19

<210> 9

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 9

gttttggtc ctttcggatg atg

23

<210> 10

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 10

cttagcagct cttactatct tcc

23

<210> 11
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 11
 gaagataacca gatccttgga g 21

<210> 12
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 12
 ctgataatcc cagaagacag cg 22

<210> 13
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 13
 gagaatgtgg tatagaaaag cacc 24

<210> 14
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 14
 ttcctctcct ttgtagatg cc 22

<210> 15
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 15	
ctagggtcaaa gcaatatgga ctc	23
<210> 16	
<211> 20	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Primer	
<400> 16	
ccatagtgct gagaaccctg	20
<210> 17	
<211> 24	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Primer	
<400> 17	
cagtaataaaa ctaacaaaca ggtg	24
<210> 18	
<211> 19	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Primer	
<400> 18	
gccatatgtg agcaagcag	19
<210> 19	
<211> 22	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Primer	
<400> 19	
gccgtgactt actgtaagga tg	22
<210> 20	
<211> 21	

<212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 20
 gaggaccctt ttcactcttg g 21

<210> 21
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 21
 ctggacatag tttctgggag at 22

<210> 22
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 22
 gtcagagcac tttttccgat gc 22

<210> 23
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 23
 caatgtgggg caaagcccta g 21

<210> 24
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 24

caggatttttc taagcacgtt tctg

24

<210> 25
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 25
 ccagaatttt caagccagag gg

22

<210> 26
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 26
 ctgagtggca tctaagtttg c

21

<210> 27
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 27
 cctcttctta gtttccgtgt ttc

23

<210> 28
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 28
 cgtgatgacc tgagacaaga tg

22

<210> 29
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 29
 gagcagtcag cagaacttgt ac 22

<210> 30
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 30
 ctaggtcaaa gcaatatgga ctc 23

<210> 31
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 31
 cagcaagaaa ttgtgtaaactt 25

<210> 32
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 32
 gccatttgac cgtggagaag tag 23

<210> 33
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 33
 ggtactttgg ctctctccag g 21

<210> 34
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 34
 caatgtgggg caaagcccta g 21

<210> 35
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 35
 cggaagtgca atggtcccac tg 22

<210> 36
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 36
 gcacctaggc taaaatgtca ag 22

<210> 37
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 37
 accactgttg ctgagatatt tc 22

<210> 38
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Primer

<400> 38

cctgattcga gatcctgaaa c

21

<210> 39

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 39

gcattcttttt ctgcctggag g

21

<210> 40

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 40

cccttttgaa ggcttgatg

20

<210> 41

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 41

gaatccaagt ttgcaggggt t

21

<210> 42

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 42

gcagtatgct gtttgacttt gg

22

<210> 43

<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 43
gaagaattgg aggcacttct gtg 23

<210> 44
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 44
catttgaccg tggagaagta gaat 24

<210> 45
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 45
ggtactttgg ctctctccag gt 22